

Pending Claims

- 1 ~~X~~ (previously amended) A method of releasing a glazing panel from a frame to which the panel is bonded by interposed bonding material, the method comprising:
- i) arranging an electrical gas discharge light delivery apparatus adjacent the glazing panel; and,
 - ii) operating the electrical gas discharge light delivery apparatus to transmit light energy through the panel to effect release of the panel from the frame.
- 2 ~~2~~ (original) A method according to claim 1, wherein the light energy delivered is of a wavelength substantially in the range 300 nm-1500nm.
- 3 ~~3~~ (original) A method according to claim 2, wherein the light energy delivered is of a wavelength substantially in the range 400nm-700nm.
- 4 ~~4~~ (original) A method according to claim 1, wherein the light energy delivered comprises a plurality of wavelengths.
- 5 ~~5~~ (original) A method according to claim 1, wherein the light energy delivered is pulsed according to a predetermined regime.
- 6 ~~6~~ (original) A method according to claim 5, wherein the pulse duration (T on) is substantially in the range 1 μ s-100ms.
- 7 ~~7~~ (original) A method according to claim 6, wherein the pulse duration is substantially in the range 1ms-2ms.
- 8 ~~8~~ (previously amended) A method according to claim 1, wherein the pulse repetition frequency is substantially in the range 0.1Hz-10Hz.

⁹ 9. (previously amended) A method according to claim 1, wherein the pulse repetition frequency is substantially in the range 0.3Hz-1Hz.

¹⁰ 10. (original) A method according to claim 1, wherein the pulse duration (T on) is less than the inter-pulse interval (T off).

¹¹ 11. (previously amended) A method according to claim 5, wherein a single pulse of light energy delivered is of sufficient energy to effect separation of the panel from the frame along a length of the bonding material.

¹² 12. (previously amended) A method according to claim 1, wherein the electrical gas discharge light delivery apparatus is hand held and positionable relative to the glazing panel manually by an operator.

¹³ 13. (previously amended) A method according to claim 1, wherein the light energy attenuates rapidly with distance such that at a few centimeters from the electrical gas discharge light delivery apparatus the light energy density is significantly diminished from its maximum value.

¹⁴ 14. (previously amended) A method according to claim 13, wherein at a distance substantially in the range 5cm or less from the electrical gas discharge light delivery apparatus the light energy density is 50% of its maximum value or below.

¹⁵ 15. (original) A method according to claim 1, wherein the light energy is non-coherent.

16. (previously canceled)

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17. (previously amended) A method according to claim 1, wherein operation of the electrical gas discharge light delivery apparatus is controlled to limit either one of the pulse rate or duration of the light pulse.

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18. (previously amended) A method according to claim 17, wherein the operation of the electrical gas discharge light delivery apparatus is controlled by:

- i) charging a capacitor arrangement;
- ii) initiating a trigger pulse to discharge the capacitor arrangement; and
- iii) discharging the capacitor arrangement through an inductor to the gas discharge apparatus.

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19. (previously amended) Apparatus for releasing a glazing panel from a frame to which the panel is bonded by interposed bonding material, the apparatus comprising an electrical gas discharge light delivery apparatus arrangeable adjacent the glazing panel, and operable to transmit light energy through the panel to effect release of the panel from the frame.

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20. (previously amended) Apparatus according to claim 19, wherein the electrical gas discharge light delivery apparatus is controllable to pulse the light energy delivered.

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21. (previously amended) Apparatus according to claim 20, wherein the electrical gas discharge light delivery apparatus is controllable to either one of adjust or limit at least one of:
the pulse repetition rate of the light energy delivered;
the pulse duration of the light energy delivered; and
the light energy intensity delivered.

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22. (previously amended) Apparatus according to claim 19, wherein the electrical gas discharge light delivery apparatus includes a manual trigger for initiating a light energy pulse.

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23. (previously amended) Apparatus according to claim ¹⁸19, wherein means is provided for selectively adjusting the intensity of the light energy delivered.

Claims 24-26 (previously canceled)

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27. (previously amended) Apparatus according to claim ¹⁸19, wherein the electrical gas discharge light delivery apparatus includes a pulse forming network having a capacitor and inductor arrangement in which the capacitor discharges through the inductor to drive the electrical gas discharge light delivery apparatus to produce a light pulse.

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28. (original) Apparatus according to claim ²³27, including a trigger network for initiating the capacitor of the pulse forming network to discharge.

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29. (previously amended) Apparatus according to claim ¹⁹20, including control means for controlling the minimum permissible time elapsing between subsequent discharge pulses of the electrical gas discharge light delivery apparatus.

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30. (previously amended) Apparatus according to claim ¹⁸19, wherein the electrical gas discharge light delivery apparatus comprises an electrical gas discharge tube.

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31. (previously amended) Apparatus according to claim ¹⁸19, wherein the electrical gas discharge light delivery apparatus comprises a reflector arranged to direct emitted light in a predetermined direction.

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32. (previously amended) Apparatus according to claim ¹⁸19, wherein the electrical gas discharge light delivery apparatus comprises a window through which emitted light is directed to pass through the glazing panel.

Claims 33-45 (previously canceled)

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46. (previously amended) A method of releasing a windscreen panel from a frame to which the windscreen panel is bonded by interposed bonding material, the panel including first and second layers that are transparent to wavelengths in the visible range of the spectrum and an interlayer between the first and second layers, the second layer including a frit layer on an inside face thereof, the method comprising the steps of:

directing pulsed light output from a light energy delivery mechanism at the frit layer on the inside face of the second layer of the windscreen panel;
providing the pulsed light output at a wavelength absorbed by the frit layer; and
moving the light output along a path of the frit layer at a predetermined rate to carbonize the frit layer to effect release of the windscreen panel from the frame.

Claim 47 (previously canceled)

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48. (previously added) A method of releasing a glazing panel from a frame to which the glazing panel is bonded by interposed bonding material, the method comprising the steps of:

directing at least one light output pulse from an electric gas discharge tube via an optical delivery head at a wavelength to be absorbed by either one of the bonding material or a frit layer on an inside face of the glazing panel about a periphery thereof and conforming to the frame;

moving the optical delivery head to adjacent portions of the glazing panel along a path of either one of the frit layer or the bonding material; and

repeating the at least one light pulse to effect release of the glazing panel from the frame.

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~~49~~. (previously added) A glazing releaser for releasing a glazing panel from a frame to which the glazing is bonded by interposed bonding material, said glazing panel releaser comprising:

an optical delivery head to direct light at either one of the bonding material or a frit layer on an inside face of the glazing panel about a periphery thereof and conforming to the frame; and

at least one electric gas discharge tube operable to produce the light directed by said optical delivery head in the form of at least one light pulse at a wavelength to be absorbed by either one of the frit layer or the bonding material to effect release of the glazing panel from the frame.

Claim 50 (previously canceled)